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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,087	11/13/2003	Kazuhisa Yamamoto	YAO-3750US3	7923
23122	7590	09/16/2005	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			VAN ROY, TOD THOMAS	
			ART UNIT	PAPER NUMBER
			2828	
DATE MAILED: 09/16/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claim 86 is objected to because of the following informalities:

Claim 86 reads "A last protection device", and is believed to more correctly be stated "A laser projection device". The claim also states "a harmonic wave is...", wherein after reading the disclosure it is believed that "a RF wave is..." would more clearly represent the scope of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 78-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US 5303247) in view of Bradley (US 5043991).

With respect to claims 78 and 81, Yamamoto teaches a laser light source comprising: a semiconductor laser for emitting laser light (fig.15 #52, and additionally that the light be generated in a solid state source, col.25 lines 15-26) and an optical wavelength conversion element (fig.15 #55) for receiving the light so as to generate a harmonic wave (col.24 lines 26-27), the optical wavelength conversion element having periodic domain inverted structures (col.23 lines 14-25). Yamamoto does not teach the semiconductor laser to be of the distributed feedback type (DFB), or the output of the laser to be *amplified* by a solid-state source. Bradley teaches a distributed feedback type laser (output wavelength locked via grating feedback, allowing for stable wavelength emission, col.1 lines 36-38) which pumps (output being amplified, col.1 lines 25-26) by a solid-state source (fig.5). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser light source of Yamamoto with the DFB pumped solid-state medium of Bradley to efficiently (Bradley, col.1 lines 28-30, 36-41) increase the system's power output (Bradley, col.1 lines 25-26).

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With respect to claim 79, Yamamoto and Bradley teach the laser light source outlined in the rejection to claim 78, and Yamamoto further teaches the optical wavelength conversion element to have a modulation function (col.24 lines 30-31, amplitude modulation).

With respect to claim 80, Yamamoto and Bradley teach the laser light source outlined in the rejection to claim 78, and Yamamoto further teaches the optical wavelength conversion element to be formed on an $\text{LiNb}_x\text{Ta}_{1-x}\text{O}_3$ substrate (col.23 lines 17-18, $x=1$).

Claims 82-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al.

With respect to claim 82, Yamamoto teaches a semiconductor laser for emitting laser light (fig.15 #52), and an optical wavelength conversion element in which periodic domain inverted structures (col.23 lines 13-25) and an optical waveguide are formed (col.24 line 22). Yamamoto does not teach the width and thickness of the waveguide to be 40um or greater. It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the dimensions of Yamamoto to 40um or greater to adjust the power and modal outputs to fit the desired application (see MPEP 2144.05 II - In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) – describing it is not patentable to discover the optimal ranges by routine experimentation, namely waveguide dimensions).

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Claims 83-84 are rejected for the same reasons as given in the rejections to claims 79-80 above.

With respect to claim 85, Yamamoto teaches the laser light source outlined in the rejection to claim 82, and Yamamoto further teaches the waveguide is of a graded type (col.5 lines 48-60, index grading).

Claim 86 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rao et al. (US 5295143) in view of Huber (US 5295209).

With respect to claim 86, Rao teaches a laser projection device comprising: a semiconductor laser (col.2 line 15) and a screen (col.1 lines 29-37, use of device described as in a color display etc., which inherently include a screen). Rao does not teach a harmonic wave to be overlapped onto the semiconductor laser during operation. Huber teaches a DFB semiconductor laser which is modulated using an RF signal (col.6 lines 31-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the projection device of Rao with the modulated RF signal of Huber in order to allow for higher power operation (Huber, col.6 lines 44-47).

Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rao et al. in view of Huber, and further in view of Yamamoto.

With respect to claim 87, Rao and Huber teach the projection device as outlined in the rejection to claim 86, but do not teach the use of an optical wavelength conversion element using domain-inverted structures. Yamamoto teaches an optical

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wavelength conversion element using domain inversion structures (fig.15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the projection device of Rao and Huber with the conversion element of Yamamoto in order to both convert to a harmonic of the input light for viewing purposes, as well as to amplify the output signal upon leaving the conversion element (Yamamoto, col.24 lines 28-30)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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